

105 CMR 120.000: MASSACHUSETTS REGULATIONS FOR THE CONTROL OF RADIATION
(MRCR)

Section

120.001: GENERAL PROVISIONS

120.002: Purpose and Scope

120.003: Regulatory Authority

120.004: Citation

120.005: Definitions

120.006: Exemptions

120.007: Prohibited Uses

120.008: Impounding

120.009: Records

120.010: Inspections

120.011: Tests

120.012: Additional Requirements

120.013: Communications

120.014: Units of Exposure and Dose

120.015: Units of Activity

ENFORCEMENT

120.016: Enforcement Policy and Procedures

120.017: Severability

120.018: Public Disclosure of Enforcement Actions

120.019: Appendix A -- Severity Categories

120.020: REGISTRATION OF RADIATION MACHINE FACILITIES AND SERVICES

120.021: Purpose and Scope

120.022: Definitions

120.023: Exemptions

120.024: Plan Review

120.025: Application for Registration

120.026: Application for Registration Services

120.027: Certificate of Registration

120.028: Expiration of Notice of Registration

120.029: Renewal of Notice of Registration

120.030: Report of Changes

120.031: Approval Not Implied

120.032: Assembler and/or Transfer Obligation

120.033: Out-of-State Radiation Machines

120.040: Notification to Fire Department

120.100: LICENSING OF RADIOACTIVE MATERIAL

120.101: Purpose and Scope

120.102: Definitions

120.103: Source Material

120.104: Radioactive Material Other Than Source Material

120.120: Types of Licenses

120.121: General Licenses - Source Material

120.122: General Licenses - Radioactive Material Other Than Source Material

120.124: Filing Application for Specific Licenses

120.125: General Requirements for the Issuance of Specific Licenses

120.126: Special Requirements for Issuance of Certain Specific Licenses for Radioactive Material

120.127: Special Requirements for Specific Licenses of Broad Scope

120.128: Special Requirements for a Specific License to Manufacture, Assemble, Repair, or Distribute
Commodities, Products, or Devices which Contain Radioactive Material

120.130: Issuance of Specific Licenses

120.131: Specific Terms and Conditions of Licenses

120.132: Expiration and Termination of Licenses

Section: continued

- 120.133: Renewal of Licenses
- 120.134: Amendment of Licenses at Request of Licensee
- 120.135: Agency Action on Applications to Renew or Amend
- 120.136: Persons Possessing a License for Source, Byproduct, or Special Nuclear Material in Quantities Not Sufficient to Form a Critical Mass on Effective Date of 105 CMR 120.000
- 120.137: Persons Possessing Naturally Occurring and Accelerator-Produced Radioactive Material (NARM) on Effective Date of 105 CMR 120.000
- 120.140: Transfer of Material
- 120.142: Reporting Requirements
- 120.146: Emergency Plan for Responding to a Release
- 120.150: Modification and Revocation of Licenses
- 120.190: Reciprocal Recognition of Licenses
- 120.195: Appendix A -- Exempt Concentrations
- 120.196: Appendix B -- Table 1 Exempt Quantities
Table II -- Quantities for Use With 105 CMR 120.125(C)(1)
Table III -- Quantities of Radioactive Materials Requiring Consideration of the Need for an Emergency Plan for Responding to a Release
- 120.197: Appendix C -- Limits for Broad Licenses
- 120.198: Appendix D -- Criteria Relating to Use of Financial Tests and Parent Company Guarantees for Providing Reasonable Assurance of Funds for Decommissioning
- 120.199: Appendix E -- Criteria Relating to Use of Financial Tests and Self Guarantees for Providing Reasonable Assurance of Funds for Decommissioning
- 120.200: STANDARDS FOR PROTECTION AGAINST RADIATION
- 120.201: Purpose
- 120.202: Scope
- 120.203: Definitions
- 120.204: Implementation
- RADIATION PROTECTION PROGRAMS
- 120.210: Radiation Protection Programs
- OCCUPATIONAL DOSE LIMITS
- 120.211: Occupational Dose Limits for Adults
- 120.212: Compliance with Requirements for Summation of External and Internal Doses
- 120.213: Determination of External Dose from Airborne Radioactive Material
- 120.214: Determination of Internal Exposure
- 120.215: Determination of Prior Occupational Dose
- 120.216: Planned Special Exposures
- 120.217: Occupational Dose Limits for Minors
- 120.218: Dose to an Embryo/Fetus

RADIATION DOSE LIMITS FOR INDIVIDUAL MEMBERS OF THE PUBLIC

- 120.221: Dose Limits for Individual Members of the Public
- 120.222: Compliance with Dose Limits for Individual Members of the Public
- 120.223: Testing for Leakage or Contamination of Sealed Sources

SURVEYS AND MONITORING

- 120.225: General
- 120.226: Conditions Requiring Individual Monitoring of External and Internal Occupational Dose

CONTROL OF EXPOSURE FROM EXTERNAL SOURCES IN RESTRICTED AREAS

- 120.227: Control of Access to High Radiation Areas
- 120.228: Control of Access to Very High Radiation Areas
- 120.229: Control of Access to Very High Radiation Areas -- Irradiators

RESPIRATORY PROTECTION AND CONTROLS TO RESTRICT INTERNAL EXPOSURE IN RESTRICTED AREAS

- 120.231: Use of Process or Other Engineering Controls
- 120.232: Use of Other Controls
- 120.233: Use of Individual Respiratory Protection Equipment

STORAGE AND CONTROL OF LICENSED OR REGISTERED SOURCES OF RADIATION

- 120.235: Security and Control of Licensed or Registered Sources of Radiation

Section: continued

PRECAUTIONARY PROCEDURES

- 120.241: Caution Signs
- 120.242: Posting Requirements
- 120.243: Exceptions to Posting Requirements
- 120.244: Labeling Containers and Radiation Machines
- 120.245: Exemptions to Labeling Requirements
- 120.246: Procedures for Receiving and Opening Packages

WASTE MANAGEMENT

- 120.251: General Requirements
- 120.252: Method for Obtaining Approval of Proposed Disposal Procedures
- 120.253: Discharge by Release into Sanitary Sewerage
- 120.254: Treatment by Incineration
- 120.255: Disposal of Specific Wastes
- 120.256: Transfer for Disposal and Manifests
- 121.257: Compliance with Environmental and Health Protection Regulations

RECORDS

- 120.261: General Provisions
- 120.262: Records of Radiation Protection Programs
- 120.263: Records of Surveys
- 120.264: Records of Tests for Leakage or Contamination of Sealed Sources
- 120.265: Records of Prior Occupational Dose
- 120.266: Records of Planned Special Exposures
- 120.267: Records of Individual Monitoring Results
- 120.268: Records of Dose to Individual Members of the Public
- 120.269: Records of Waste Transfers
- 120.270: Records of Testing Entry Control Devices for Very High Radiation Areas
- 120.271: Form of Records

REPORTS

- 120.281: Reports of Stolen, Lost, or Missing Licensed or Registered Sources of Radiation
- 120.282: Notification of Incidents
- 120.283: Reports of Exposures, Radiation Levels, and Concentrations of Radioactive Material Exceeding the Constraints or the Limits
- 120.284: Reports of Planned Special Exposures
- 120.287: Notifications and Reports to Individuals
- 120.288: Reports of Leaking or Contaminated Sealed Sources

ADDITIONAL REQUIREMENTS

- 120.291: Vacating Premises
- 120.295: Appendix A -- Protection Factors for Respirators
- 120.296: Appendix B -- Annual Limits on Intake (ali) and Derived Air Concentrations (dac) of Radionuclides for Occupational Exposure; Effluent Concentrations; Concentrations for Release to Sanitary Sewerage
- 120.297: Appendix C -- Quantities of Licensed Material Requiring Labeling
- 120.298: Appendix D -- Requirements for Transfer of Low-level Radioactive Waste for Disposal at Land Disposal Facilities and Manifests
- 120.299: Appendix E -- Classification and Characteristics of Low-level Radioactive Waste

120.300: RADIATION SAFETY REQUIREMENTS FOR INDUSTRIAL RADIOGRAPHIC OPERATIONS

- 120.301: Purpose and Scope
- 120.302: Definitions
- 120.303: Exemptions
- 120.310: Records of Receipt, Transfer, and Disposal of Sources of Radiation
- 120.311: Limits on Levels of Radiation for Radiographic Exposure Devices, Source Changers, and Transport Containers
- 120.312: Locking of Sources of Radiation
- 120.313: Storage Precautions

Section: continued

- 120.314: Radiation Survey Instruments
- 120.315: Requirements for Equipment Used in Industrial Radiographic Operations
- 120.316: Quarterly Inventory
- 120.317: Utilization Logs
- 120.318: Inspection and Maintenance
- 120.319: Permanent Radiographic Installations
- 120.320: Training and Testing
- 120.321: Applications and Examinations
- 120.322: Revocation or Suspension of an I.D. Card
- 120.323: Personnel Monitoring Control
- 120.330: Operating and Internal Audit Requirements
- 120.331: Security in Field Operations
- 120.332: Posting
- 120.333: Radiation Surveys and Survey Records
- 120.334: Records Required at Temporary Job Sites
- 120.337: Special Requirements and Exemptions for Enclosed Radiography
- 120.340: Underwater and Lay-barge Radiography
- 120.350: Prohibitions
- 120.360: Licensing and Registration Requirements for Industrial Radiographic Operations
- 120.380: Radiation Safety Officer
- 120.385: Notification of Incidents
- 120.390: Reciprocity
- 120.395: Appendix A -- Subjects for Instruction of Radiographer Trainees
- 120.396: Appendix B -- General Requirements for Inspection of Industrial Radiographic Equipment
- 120.397: Appendix C -- Time Requirements for Record Keeping
- 120.398: Appendix D -- Operating and Emergency Procedures

- 120.400: X-RAYS IN THE HEALING ARTS
- 120.401: Purpose and Scope
- 120.402: Definitions
- 120.403: General Requirements
- 120.404: General Requirements for All Diagnostic X-Ray Systems
- 120.405: Fluoroscopic X-Ray Systems
- 120.406: Radiographic Systems Other Than Fluoroscopic, Computed Tomography Systems
- 120.407: Dental Radiographic Systems
- 120.408: Veterinary X-ray Systems
- 120.409: Computed Tomography X-Ray Systems
- 120.420: Appendix A -- Radiation Shielding and Safety Requirements
- 120.421: Appendix B -- Information to be Submitted by Persons Proposing to Conduct Healing Arts Screening
- 120.422: Appendix C -- Design Requirements for an Operator's Booth
- 120.423: Appendix D -- Exemption from Shielding for Certain Fluoroscope Procedures

- 120.430: THERAPEUTIC RADIATION MACHINES
- 120.431: Purpose and Scope
- 120.432: Definitions
- 120.433: General Administrative Requirements for Facilities Using Therapeutic Radiation Machines
- 120.434: General Technical Requirements for Facilities Using Therapeutic Radiation Machines
- 120.435: Quality Management Program
- 120.436: Therapeutic Radiation Machines of Less Than 500 kV
- 120.437: Therapeutic Radiation Machines - Photon Therapy Systems (500 kV and Above) and Electron Therapy Systems (500 keV and Above)
- 120.438: Calibration of Survey Instruments
- 120.439: Shielding and Safety Design Requirements
- 120.440: Appendix A: Information on Radiation Shielding Required for Plan Reviews

- 120.500: USE OF RADIONUCLIDES IN THE HEALING ARTS
- 120.501: Purpose and Scope
- 120.502: Definitions
- 120.503: License Required

Section: continued

- 120.504: License Amendments
- 120.505: Notifications
- 120.506: ALARA Program
- 120.507: Radiation Safety Officer
- 120.508: Radiation Safety Committee
- 120.509: Statement of Authorities and Responsibilities
- 120.510: Supervision
- 120.511: Visiting Authorized User
- 120.512: Mobile Nuclear Medicine Service Administrative Requirements
- 120.513: Quality Management Program
- 120.514: Records, Notifications, and Reports of Misadministrations
- 120.515: Supplies
- 120.516: Quality Control of Diagnostic Equipment
- 120.517: Possession, Use, Calibration, and Check of Dose Calibrators
- 120.518: Calibration and Check of Survey Instruments
- 120.519: Assay of Radiopharmaceutical Dosages
- 120.520: Authorization for Calibration and Reference Sources
- 120.521: Requirements for Possession of Sealed Sources and Brachytherapy Sources
- 120.522: Syringe Shields
- 120.523: Syringe Labels
- 120.524: Vial Shields
- 120.525: Vial Shield Labels
- 120.526: Surveys for Ambient Radiation Dose Rate and Contamination
- 120.527: Release of Patients Containing Radiopharmaceuticals or Permanent Implants
- 120.528: Mobile Nuclear Medicine Service Technical Requirements
- 120.529: Storage of Volatiles and Gases
- 120.530: Decay-In-Storage
- 120.531: Use of Radiopharmaceuticals for Uptake, Dilution, or Excretion Studies
- 120.532: Possession of Survey Instrument
- 120.533: Use of Radiopharmaceuticals, Generators, and Reagent Kits for Imaging and Localization Studies
- 120.534: Radionuclide Contaminants
- 120.535: Control of Aerosols and Gases
- 120.536: Possession of Survey Instruments
- 120.537: Use of Radiopharmaceuticals for Therapy
- 120.538: Safety Instruction
- 120.539: Safety Precautions
- 120.540: Possession of Survey Instruments
- 120.541: Use of Sealed Sources for Diagnosis
- 120.542: Availability of Survey Instrument
- 120.543: Use of Sources for Brachytherapy
- 120.544: Safety Instruction
- 120.545: Safety Precautions
- 120.546: Brachytherapy Sources Inventory
- 120.547: Release of Patients or Human Research Subjects Treated With Temporary Implants
- 120.548: Possession of Survey Instruments
- 120.549: Use of a Sealed Source in a Teletherapy Unit
- 120.550: Maintenance and Repair Restrictions
- 120.551: Amendments
- 120.552: Safety Instruction
- 120.553: Doors, Interlocks, and Warning Systems
- 120.554: Possession of Survey Instrument
- 120.555: Radiation Monitoring Device
- 120.556: Viewing System
- 120.557: Dosimetry Equipment
- 120.558: Full Calibration Measurements
- 120.559: Periodic Spot-Checks
- 120.560: Radiation Surveys for Teletherapy Facilities
- 120.561: Safety Spot-Checks for Teletherapy Facilities
- 120.562: Modification of Teletherapy Unit or Room Before Beginning a Treatment Program

Section: continued

- 120.563: Reports of Teletherapy Surveys, Checks, Tests and Measurements
- 120.564: Five Year Inspection
- 120.565: Radiation Safety Officer
- 120.566: Training for Experienced Radiation Safety Officer
- 120.567: Training for Uptake, Dilution, or Excretion Studies
- 120.568: Training for Imaging and Localization Studies
- 120.569: Training for Therapeutic Use of Radiopharmaceuticals
- 120.570: Training for Therapeutic Use of Brachytherapy Sources
- 120.571: Training for Ophthalmic Use of Strontium-90
- 120.572: Training for Use of Sealed Sources for Diagnosis
- 120.573: Training for Teletherapy
- 120.574: Training for Teletherapy Physicist
- 120.575: Training for Experienced Authorized Users
- 120.576: Physician Training in a Three-Month Program
- 120.577: Recentness of Training
- 120.580: Training for an Authorized Nuclear Pharmacist
- 120.581: Training for Experienced Nuclear Pharmacist

120.600: RADIATION SAFETY REQUIREMENTS FOR ANALYTICAL X-RAY EQUIPMENT

- 120.601: Purpose and Scope
- 120.602: Definitions
- 120.603: Equipment Requirements
- 120.604: Area Requirements
- 120.605: Operating Requirements
- 120.606: Personnel Requirements

120.620: LICENSING AND RADIATION SAFETY REQUIREMENTS FOR IRRADIATORS

- 120.621: Purpose and Scope
- 120.622: Definitions
- 120.631: Application for a Specific License
- 120.633: Specific Licenses for Irradiators
- 120.635: Start of Construction
- 120.637: Applications for Exemptions
- 120.639: Request for Written Statements

Design and Performance Requirements for Irradiators

- 120.641: Performance Criteria for Sealed Sources
- 120.643: Access Control
- 120.645: Shielding
- 120.647: Fire Protection
- 120.649: Radiation Monitors
- 120.651: Control of Source Movement
- 120.653: Irradiator Pools
- 120.655: Source Rack Protection
- 120.657: Power Failures
- 120.659: Design Requirements
- 120.661: Construction Monitoring and Acceptance Testing

Operation of Irradiators

- 120.671: Training
- 120.673: Operating, Safety, and Emergency Procedures
- 120.675: Personnel Monitoring
- 120.677: Radiation Surveys
- 120.679: Detection of Leaking Sources
- 120.681: Inspection and Maintenance
- 120.683: Pool Water Purity
- 120.685: Attendance During Operation
- 120.687: Entering and Leaving the Radiation Room
- 120.689: Irradiation of Explosive or Flammable Materials
- 120.691: Records and Retention Periods
- 120.693: Reports

Section: continued

120.700: RADIATION SAFETY REQUIREMENTS FOR PARTICLE ACCELERATORS

- 120.701: Purpose and Scope
- 120.702: Registration Requirements
- 120.703: General Requirements for the Issuance of a Registration for Particle Accelerators
- 120.704: Human Use of Particle Accelerators
- 120.705: Limitations
- 120.706: Shielding and Safety Design Requirements
- 120.707: Particle Accelerator Controls and Interlock Systems
- 120.708: Warning Devices
- 120.709: Operating Procedures
- 120.710: Radiation Monitoring Requirements
- 120.711: Ventilation Systems

120.750: NOTICES, INSTRUCTIONS, AND REPORTS TO WORKERS; INSPECTIONS

- 120.751: Purpose and Scope
- 120.752: Posting of Notices to Workers
- 120.753: Instructions to Workers
- 120.754: Notifications and Reports to Individuals
- 120.755: Presence of Representatives of Licensees or Registrants and Workers During Inspection
- 120.756: Consultation with Workers During Inspections
- 120.757: Requests by Workers for Inspections
- 120.758: Inspections Not Warranted; Informal Review
- 120.760: Emergency Plans

120.770: TRANSPORTATION OF RADIOACTIVE MATERIAL

- 120.771: Purpose and Scope
- 120.772: Definitions
- 120.773: Requirement for License
- 120.774: Exemptions
- 120.775: Transportation of Licensed Material
- 120.776: General Licenses for Carriers
- 120.777: General License: Nuclear Regulatory Commission - Approved Packages
- 120.778: General License - Previously Approved Packages
- 120.779: General License: U.S. Department of Transportation Specification Container
- 120.780: General License - Use of Foreign Approved Package
- 120.781: General License: Fissile Material, Limited Quantity Per Package
- 120.782: General License: Fissile Material, Limited Moderator Per Package
- 120.783: Assumptions as to Unknown Properties of Fissile Material
- 120.784: Preliminary Determinations
- 120.785: Routine Determinations
- 120.786: Air Transport of Plutonium
- 120.787A: Opening Instructions
- 120.787: Shipment Records
- 120.788: Reports
- 120.789: Advance Notification of Transport of Nuclear Waste
- 120.790: Quality Assurance Requirements
- 120.795: Appendix A -- Determination of A₁ and A₂

120.800: LICENSING AND OPERATIONAL REQUIREMENTS FOR LOW-LEVEL RADIOACTIVE WASTE FACILITIES

- 120.801: Purpose and Scope
- 120.802: Regulatory Authority
- 120.803: Definitions
- 120.810: General Requirements
- 120.811: Protection of the General Population from Releases of Radioactivity
- 120.812: Protection of Individuals from Inadvertent Intrusion
- 120.813: Protection of Individuals During Operations
- 120.814: Stability of the Facility After Closure
- 120.815: Facility Design
- 120.816: Facility Institutional Control

Section: continued

- 120.820: License Required
- 120.821: Licensing Process
- 120.822: Content of Application
- 120.823: General Information
- 120.824: Specific Technical Information
- 120.825: Technical Analyses
- 120.826: Institutional Information
- 120.827: Financial Information
- 120.828: Preoperational Environmental Monitoring
- 120.829: Standards for Issuance of a License
- 120.830: Conditions of Licenses
- 120.831: Environmental Monitoring
- 120.832: Facility Design
- 120.833: Facility Construction
- 120.834: Operating Budget Reimbursements
- 120.840: Facility Opening
- 120.841: Facility Operation
- 120.842: Receipt, Handling, and Inspection of Waste
- 120.843: Facility Boundaries and Markers
- 120.844: Contingency Plans for Facility Operations
- 120.845: Facility Maintenance
- 120.850: Funding for Facility Closure
- 120.851: Application for Renewal or Closure
- 120.852: Procedures for Review of Application for Facility Closure and Closure Plan
- 120.853: Facility Closure
- 120.860: Post-Closure Observation and Maintenance
- 120.870: Transfer of License
- 120.871: Institutional Control
- 120.880: Maintenance of Records, Reports, and Transfers
- 120.881: Tests on Facilities
- 120.882: Department Inspection of Facilities
- 120.885: Waivers

- 120.890: LOW-LEVEL RADIOACTIVE WASTE MINIMIZATION REGULATIONS
- 120.891: Purpose and Scope
- 120.892: Regulatory Authority
- 120.893: Definitions
- 120.895: Objectives
- 120.896: Statement and Plan Requirements
- 120.897: Waste Minimization Plan Content

- 120.900: RADIATION SAFETY REQUIREMENTS FOR WIRELINE SERVICE OPERATIONS AND
SUBSURFACE TRACER STUDIES
- 120.901: Purpose and Scope
- 120.902: Definitions
- 120.903: Prohibition
- 120.911: Limits on Levels of Radiation
- 120.912: Storage Precautions
- 120.913: Transport Precautions
- 120.914: Radiation Survey Instruments
- 120.915: Leak Testing of Sealed Sources
- 120.916: Quarterly Inventory
- 120.917: Utilization Records
- 120.918: Design, Performance, and Certification Criteria for Sealed Sources Used in Downhole Operations
- 120.919: Labeling
- 120.920: Inspection and Maintenance
- 120.931: Training Requirements
- 120.932: Operating and Emergency Procedures
- 120.933: Personnel Monitoring
- 120.941: Security

Section: continued

- 120.942: Handling Tools
- 120.943: Subsurface Tracer Studies
- 120.944: Particle Accelerators
- 120.945: Uranium Sinker Bars
- 120.946: Use of Sealed Source in a Well Without a Surface Casing
- 120.951: Radiation Surveys
- 120.952: Documents and Records Required at Field Stations
- 120.953: Documents and Records Required at Temporary Jobsites
- 120.954: Notification of Incidents, Abandonment, and Lost Sources
- 120.960: Appendix A -- Subjects to be Included in Training Courses for Logging Supervisors
- 120.961: Appendix A -- Example of Plaque for Identifying Wells Containing Sealed Sources Containing
Radioactive Material Abandoned Downhole